CLAIMS

1. A process for selectively removing alkynes and/or diolefins from a feedstock also containing olefins, the process comprising contacting the feedstock with hydrogen in the presence of a catalyst composition comprising a support and at least one metal component selected from Groups 8 to 10 of the Periodic Table of Elements, wherein the catalyst composition is produced by a method comprising:

(a) impregnating the support with a compound of said at least one metal;

(b) contacting said support with at least one organic nitrogen-containing compound; and

(c) calcining the support.

2. The process of claim 1 wherein contacting said support with said at least one organic nitrogen-containing compound is effected before impregnation of the support with said compound of said at least one metal.

3. The process of claim 1 wherein contacting said support with said at least one organic nitrogen-containing compound is effected after impregnation of the support with said compound of said at least one metal.

4. The process of claim 1 wherein contacting said support with said at least one organic nitrogen-containing compound is effected during impregnation of the support with said compound of said at least one metal.

5. The process of claim 1 wherein said at least one metal selected from Groups 8 to 10 of the Periodic Table of Elements includes rhodium.

6. The process of claim 5 wherein the catalyst composition further comprises at least one metal component selected from Group 13 of the Periodic Table of Elements.

7. The process of claim 6 wherein said at least one metal component selected from Group 13 of the Periodic Table of Elements includes indium.

8. The process of claim 7 wherein the catalyst composition includes at least one additional metal component different from rhodium and selected from Groups 8 to 10 of the Periodic Table of Elements.

9. The process of claim 7 wherein the catalyst composition includes at least one additional metal component selected from iron, ruthenium and cobalt.

10. The process of Claim 9 wherein said at least one additional metal component is impregnated on said support before the impregnation of said compound of said at least one metal.

11. The process of Claim 10 wherein contacting said support with said at least one organic nitrogen-containing compound is effected after impregnation of said support with said at least one additional metal component

12. The process of claim 1 wherein said support is selected from alumina, zirconia and ceria/alumina.

13. The process of claim 1 wherein said organic nitrogen-containing compound is an aminoacid or an aminoalcohol.

14. The process of claim 1 wherein said organic nitrogen-containing compound is an aminoalcohol.

15. The process of claim 1 wherein said organic nitrogen-containing compound is 2-amino-2-methyl-1-propanol.

16. The process of claim 1 wherein said calcining (c) is effected at a temperature of about 100°C to about 650°C.

17. The process of claim 1 wherein the alkynes and/or diolefins have 2 to 4 carbon atoms and the feedstock also contains C_2 to C_4 olefins.

18. The process of claim 1 wherein contacting said feedstock with hydrogen the presence of said catalyst composition is conducted at a temperature of from about 20°C to about 150°C, a pressure of from about 690 kPa to 4100 kPa, and a molar ratio of hydrogen to alkynes and/or diolefins of from about 1 to about 1000.

19. A method of making a catalyst composition comprising a support, a first metal component comprising rhodium and a second metal component comprising at least one metal selected from Group 13 of the Periodic Table of Elements, wherein the method comprises

(a) impregnating the support with a rhodium compound,

(b) impregnating the support with a compound of said second metal;

(c) contacting said support with at least one organic nitrogen-containing compound; and

(d) after (a), (b) and (c), calcining the support

20. The method of claim 19 wherein said contacting (c) is conducted simultaneously with either or both of the impregnating (a) and (b).

21 The method of claim 19 wherein said at least one metal selected from Group 13 of the Periodic Table of Elements includes indium.

22. The method of claim 19 wherein the catalyst composition further includes a metal component selected from iron, cobalt and ruthenium.

23. The method of claim 19 wherein said support is selected from alumina, zirconia and ceria/alumina.

24. The method of claim 19 wherein said organic nitrogen-containing compound is an aminoacid or an aminoalcohol.

25. The method of claim 19 wherein said organic nitrogen-containing compound is an aminoalcohol

26. The method of claim 19 wherein said organic nitrogen-containing compound is 2-amino-2-methyl-1-propanol.

27. The method of claim 19 wherein said calcining (c) is effected at a temperature of about 100°C to about 650°C.

28. The method of claim 27 wherein said calcining (c) is effected in an inert or oxidizing atmosphere.

29. The method of claim 27 wherein said calcining (c) is effected in a reducing atmosphere.

30. The method of claim 27 wherein said calcining (c) includes a first calcining step an inert or oxidizing atmosphere and a second calcining step in a reducing atmosphere.